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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/756,922	01/13/2004	Daniel L. Gysling	CC-0699	3764

7590 11/09/2005

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EXAMINER	
WEST, PAUL M	

ART UNIT	PAPER NUMBER
2856	

DATE MAILED: 11/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/756,922	GYSLING, DANIEL L.	
	Examiner	Art Unit	
	Paul M. West	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,5 and 8-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,5,8-15,17,18 and 22* is/are rejected.

7)☒ Claim(s) *16,19-21 and 23-25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *09302005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 21 is objected to because of the following informalities: The second instance of the word "of" in the first line of the claim should be omitted. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 4, 5, 8, 10, 11, 13-15, 17, 18, and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Han et al. (6672163).

4. As to claim 1, Han et al. teach an apparatus for measuring the composition of a mixture flowing through a pipe, the apparatus comprising: an ultrasonic sensor apparatus 2,4,6,8,18,20 disposed along the pipe 10 that transmits an ultrasonic signal through the mixture and receives the ultrasonic signal, to provide a measured signal indicative of the transit time of the ultrasonic signal through the mixture (Col. 4, lines 6-7), wherein the mixture includes particles suspended within a fluid (Col. 3, lines 55-59);

and a processor 21, responsive to the measured signal, that determines the speed of sound propagating through the mixture (Col. 3, lines 65-66), and responsive to the speed of sound, that determines an output signal indicative of the composition of the mixture flowing through the pipe (Col. 3, lines 7-18) using a dispersion model (Col. 5, lines 1-7).

5. As to claim 4, the apparatus is a probe (Col. 9, lines 6-7) and the pipe 10 comprises a tube having an open input end and an open output end for receiving the mixture.

6. As to claim 5, Han et al. teach the wavelength of the ultrasonic signal being less than the length scale of the particles within the mixture (Col. 6, lines 8-9).

7. As to claim 8, Han et al. teach six ultrasonic transducers 2,4,6,8,18,20 disposed axially along the pipe 10 to determine the transit time.

8. As to claims 10 and 11, Han et al. teach a first ultrasonic transducer 2 disposed at an axial location along the pipe to transmit the ultrasonic signal into the mixture, and a second ultrasonic transducer (4 or 6) (Col. 8, lines 63-67) spaced axially from the first transducer along the pipe to receive the ultrasonic signal.

9. As to claim 13, the mixture is solid particles suspended in a fluid.

10. As to claim 14, Han et al. teach using an empirically derived dispersion model (Col. 4, lines 40 and 57).

11. As to claim 15, Han et al. teach using a numerically derived dispersion model (Col. 5, lines 1-7).

12. As to claim 17, the composition of the mixture includes the phase fraction (Col. 5, lines 19-22).

13. As to claim 18, the composition of the mixture includes the size of the particles (Col. 3, lines 17-18).

14. As to claim 22, Han et al. teach a method comprising: measuring the transit time of an ultrasonic signal propagating through a mixture in a pipe (Col. 4, lines 5-7), wherein the mixture includes particles suspended within a fluid (Col. 3, lines 55-59); and determining the composition of the mixture (Col. 3, lines 7-18) by determining the speed of sound propagating through the mixture in response to the measured transit time (Col. 4, lines 5-7), and using a dispersion model (Col. 5, lines 1-7).

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Han et al.

17. As to claim 9, Han et al. does teach the wavelength of the ultrasonic signal being greater than the length scale of the particles (Col. 6, lines 5-7), but does not specifically mention that the wavelength is orders of magnitude greater than the length scale of the particles. It would have been obvious to one of ordinary skill in the art to use a wavelength that is orders of magnitude larger than the length scale of the particles

because this would ensure that the signal is not scattered off the particles before it reaches the receiver. Further, the mixture used in the apparatus of Han is of mud and water and would contain extremely many small particles by the nature of the mixture.

18. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Han et al. in view of Liljenberg et al. (2004/0006409).

19. As to claim 12, Han et al. do not teach the mixture being liquid droplets suspended in gas. Liljenberg et al. teach an apparatus for emitting acoustic signals to measure the composition of a mixture of gas containing liquid droplets (Par. 0034, lines 1-5). It would have been obvious to one of ordinary skill in the art to use the teachings of Han et al. to measure the composition of a mixture of liquid droplets suspended in a gas as taught by Liljenberg et al. because this is another use for the apparatus and makes it useful in a wider range of applications.

Allowable Subject Matter

20. Claims 16, 19-21, and 23-25 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul M. West whose telephone number is (571) 272-8590. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HEZRON WILLIAMS
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